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Story Culture Framework: A Cross Cultural Study

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ABSTRACT

Digital storytelling has emerged as a powerful tool to engage with communities in the last few years. However, little attention has been paid for the challenges and failures faced around using digital storytelling as a tool. The paper talks about digital storytelling as a participatory method explored within three culturally different transforming communities. The key finding in the study is revealing the importance of the preliminary activities that helped design the innovative methods. In this paper the author assesses how the participatory research methods, such as story interviews, digital storytelling workshops and story kits, helped to gather participants' personal experiences within the three chosen communities. The study proposes story culture framework a technique to explore cross cultural communities using stories as its principal focus. The author concludes by highlighting challenges for HCI researchers working with digital technologies and cross cultural communities.

Author Keywords

Digital Storytelling, QR Codes, IoT, Participatory Research methods, Cultural Probes, Story Cultures.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Digital storytelling can be understood as the augmentation of ancient storytelling by modern techniques that are interwoven with digital technologies including audio/video recorders, smartphones and related technologies. In this paper storytelling is used as a medium to incorporate Internet of Things (IoT) technology to support this research. In the early 1980s, in San Francisco, digital technology and storytelling were integrated into the performance theatre movement [32]. From recent studies, it is understood digital storytelling is a form of social learning. A few examples of

previous digital storytelling studies are Reitmaier et al [24] and Patra et al. [19]. These studies were carried out in low-tech communities and incorporated digital storytelling as a means of bringing about social awareness.

The study described in the paper was conducted between the period 2010 and 2014. The author explored digital storytelling by connecting the personal stories of physical objects such as photographs and artefacts to Quick Response [QR] codes using audio/video files. Integrating such technology into storytelling allows the level of technology involved to be measured at different stages while converting a story narrative into a digital story and sharing it through automatic Identification [auto ID] technology.

DIGITAL STORYTELLING, IOT AND QR CODES

Internet of Things means different things to different people. In this study Internet of Things is used as a technology to connect things with embedded process to the internet. However, from the recent studies the focus has largely been on the devices rather than the *things/objects* itself. In this study the author looks at QR code as an auto-ID technology to connect objects and stories.

The QR codes are two-dimensional barcodes similar to universal barcodes carrying information about the products to which they are attached. These QR codes allow Automatic Identification and Data Capture (AIDC), otherwise known as auto ID. Rees [22] refers to QR code as a 'story doorway' allowing users to explore stories in a non-traditional way. Tode [31] states that QR codes are a technique for encouraging engagement between the virtual world and the real world. When QR codes are scanned, users are taken to a standard website or URL page to add a sentence or more to it, and then the next user accessing it builds on the growing storyline.

Glance [10] also argues the significance of the IoT in our everyday lives with respect to objects produced and consumed, because it affects the way we use and share objects. Incorporating QR codes into objects we consume helps us track them over their lifespan, thus providing objects with a cycle or trail. This trail gives the customer valuable information about the object, detailing when it was bought from the shop and consumed, and every place it has been since manufacture. This trail of stories brings a new perspective to the object. When one consumer finds the object useless, given the attendant information, could

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ACM

another person give the object a new life and purpose? As speed [30] states:

'In the Internet of Things, objects may end up on your mantelpiece with associated memories of completely different artefacts. The value of these vessels and our attachment to them will likely depend on the social data stored in them, rather than on their physical form.'

As part of Future Everything [29], TOTeM launched the RememberMe project, integrating QR codes within it as a medium for interacting with people and encouraging them to narrate stories. On scanning the RFID tags (see Figure 1) with the reader, a video recording in the form of a story appears on screens in the shop, narrated by the person who donated the item. The QR codes also linked to stories about what the money raised would support. Speed (2010) states that the effect of embedding an object with stories and memories from its owner could be observed in the significant changes in the interaction dynamics between the buyer and the seller. Therefore, the socioeconomic value of real-world objects can also be altered by their presence in the virtual world.



Figure 1. RFID readers for the Oxfam shop on Oxford Road, Manchester.

PARTICIPATORY METHODS

In this paper the author investigates the three participatory methods namely i) story interviews, ii) digital storytelling workshops and iii) story kits, executed within the three participating communities namely i) Rameshwaram, India ii) Anstruther, United Kingdom and iii) Azores, Portugal by reflecting and critiquing the process by highlighting the challenges and failures faced during the study.

In the past, participatory methods is used as an approach either: to involve users in reflecting on future impacts in order to yield better designs; or to involve users as an end in itself as a fundamental right. Pragmatically, participation should contribute to an end that is superior to what was there before in order to yield the 'better design'.

Participatory methods is 'concerned with improving the quality of life in a broader sense, through the design of alternatives, implicitly recognising the complexity of design' [1]. The question is how to engage people so they can contribute constructively.

There are different school of thoughts with regard to participatory methods. One considers participatory methods to be participation as a means to achieve certain objectives and another looks at participation as an end in itself and a fundamental right. In this study, participatory methods sits within the two spectrums of thought because participation was key throughout, first, to identify and achieve objectives and, finally, to evaluate the findings. Studies from researchers [13,15,18,21,25,27] describe participatory methods as a collaborative approach involving the participation of community members. Despite these seemingly positive views, however, involving community members in research, particularly cross-cultural communities, poses many challenges for researchers. Our values and issues around power remain critical factors to be continually aware of and reflected upon.

Sarri and Sarri [26] define participatory methods as a 'community directed process' of gathering and analysing information on a certain issue for taking action and making change. In the past researchers [5,6,12,20,23,27] have pointed out the disadvantages of applying participatory methods. Recent study [14] by Manohar and Briggs have demonstrated the limitation of participatory methods and at the same time shown as collaborative tool to bring critical discussion. Reimer [23] highlights the 'inherent relationship researchers have with local individuals hired to assist in the research process' as a disadvantage. Adding to Reimer, Bennett [3] argues 'not everyone within the community will want to partake in participatory research'. To avoid these challenges, it is important as a researcher to identify the limitations of the research at the beginning and establish trust with the community.

STORIES AS RESEARCH TOOL

Brown et al. [4] have shown how storytelling can be used as a tool to identify social issues and to preserve sociocultural identity. Sole and Wilson [28] state that stories assist the narrators and the listeners in articulating and expressing experiences from their past, and help them understand the possible future. Linnemeier et al. [16] state that stories collected through informal interviews help to build new connections within the community; such stories generally talk about its cultural values and identity. Individuals and collectives in a community wanting to preserve their cultural identity and share their experiences in an informal and casual method adapt storytelling and anecdotes as a valuable approach.

Objects and photographs create a sense of attachment that transcends the borders of functionality. Every object bears its own stories. Using photographs or objects permits people to recollect memories and involve themselves

specifically with a time in their past associated with the objects [9]. This is because a small story is embedded in a photograph or an object, and an object often takes the form of a possession of a person or a family living in the domestic home. When stories travel through the years as objects, they take on a new form and shape every time the story is told. Hence, the object knowingly or unknowingly forms a trail.

PARTICIPANT COMMUNITIES

The author chose three fishing communities i) Rameshwaram, India ii) Anstruther, UK and iii) Azores, Portugal. The three chosen coastal fishing communities were identified as transforming communities. A generation ago, they were surviving as 'traditional' fishing villages because fishing was their main occupation. However, these transforming communities face the fear of losing their traditional identity to rapidly changing lifestyles and emerging technologies. The rationale behind choosing fishing communities for this study was because the storytelling tradition are at their strongest with fishermen and coastal communities [17].

Participants

During the course of the study the author worked with 169 participants. 38 of these were from Rameshwaram in India, 41 were from the Azores, Portugal and 90 were from Anstruther in the UK (see Table 1). Selection of the participants entailed: i) selecting participants with a family background in fishing; ii) recruiting participants from a wide age range and iii) consideration of gender balance. In each community the author identified mediators to recruit and engage with participants. All of the participants during the study were part of a fishing community. The selection process varied during the three stages of the research. During the field study phase, the author visited each community in person and approached participants directly in the field to elicit story interviews.

	India	Portugal	UK
Field Studies - Story Interviews	23	19	11
Digital Storytelling workshop	5	12	69
Story Kit Method	10	10	10

Table 1. Table shows the number of participants participated in the three chosen communities India, Portugal and the UK across three research methods i) field study, ii) digital storytelling workshop and iii) story kit method.

This approach led to familiarity between the participants and the author as researcher and, in turn, obtrusive barriers

were broken down. This approach was open-ended, informal and, hence, unstructured, it meant the author could select the context for the subsequent research stages and determine the research direction.

During the digital storytelling workshops phase, the participants were invited from the chosen communities through invitations posted within the community and by word of mouth through the mediators. During the story kit phase, story kits were posted to the mediators to the three communities, which were later distributed to the participants.

METHODOLOGY

Field Study

Visiting the participants from all three communities was essential, especially during this initial research stage. The field study stage included observation, and story interviews, through which helped the author gain an intimate knowledge of the chosen community and provides an opportunity to interact with people in their natural environment within an extended time period (see Figure 2).

Observation

The author adapted observation methods based on traditional ethnographic research to understand the chosen fishing communities and their lifestyles. The observation method consisted of field notes, photographs and video recordings of interviews with participants. The observation method for each community also included a certain level of cultural understanding, achieved through the presence of the mediator while conducting the interviews.

Story Interviews

The purpose of the story interview was to collect personal stories or similarly unforgettable stories from the participants. The questions also helped them to reflect on their current technology usage in their day-to-day activities. The design rationale behind the questions was to make the participants feel at ease so that the author could collect data more naturally in the form of stories.



Figure 2. (left) a participant from Portugal during the field study. (right) Participants from India during field study.

Digital Storytelling Workshop

The main focus of the study employing this particular research method is to create digital storytelling through QR codes, because these allow participants to use digital tools to tell a story. By involving participants of all age ranges, the digital storytelling workshops explored the cross-generational and cross-cultural boundaries of the participants through their narratives. Each workshop focused on connecting stories to the objects or photographs participants had brought along or to objects in the museum. The author recorded their stories and uploaded them to a hosting website entitled Tales of Things (talesofthings.com). The author then attached QR code tags carrying their respective stories to the participants' objects. The QR codes gave global access to the stories to anyone from anywhere who had access to a smartphone, thus making the stories digital (see Figure 3).

Objectives for the Participants

- to overcome their inhibitions and bring with them to the workshop a personal object (artefact or photograph) they value most;
- to narrate personal stories or unforgettable stories inspired by their personal objects.

Objectives for the Workshops

- to identify and explore areas of commonality, shared boundaries and differences within the chosen research method;
- to identify opportunities for new hybrid research using design methods combining participatory research, action research and the testing of technology within and across the participating communities.
- to illustrate different responses observed within these diverse communities by involving people in research projects in order to arrive at and disseminate conclusions from the data gathered.

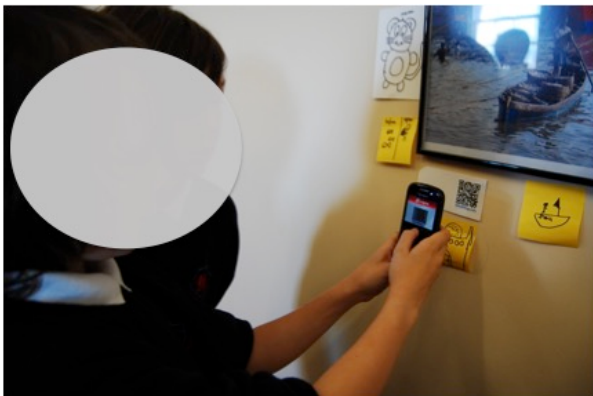


Figure 3. A UK participant engaging with auto ID technology to share stories.

Story Kit

In this study, the author designed story kits inspired and adapted from cultural probes. The story kit is a research method designed to focus on stories for gathering information about participants in a creative application. The story kit was designed specifically so the participants could share information through their narratives. They could control what information they captured, recorded and shared through the kits. The information in the kit were translated to relevant languages such as Tamil for participants in India and Portuguese for participants in Azores. The story kit used in this research consisted of the following elements: 1. story manual, 2. sound recorder, 3. disposable camera, 4. questionnaire, 5. story tag and 6. instruction manual.

1. Story manual

The story manual included photographs taken while on field trips to the participating communities and those that the participants had taken illustrating their own personal perceptions of their communities (see Figure 4 and 5). The author chose those photographs from the different communities that pinpointed their own unique cultural context. The intention in combining the images in such a pattern and presenting them to the participants was to elicit stories from participants.

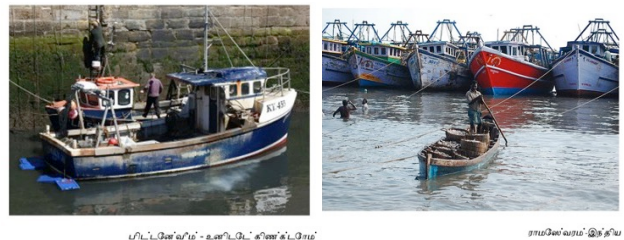


Figure 4. Story manual

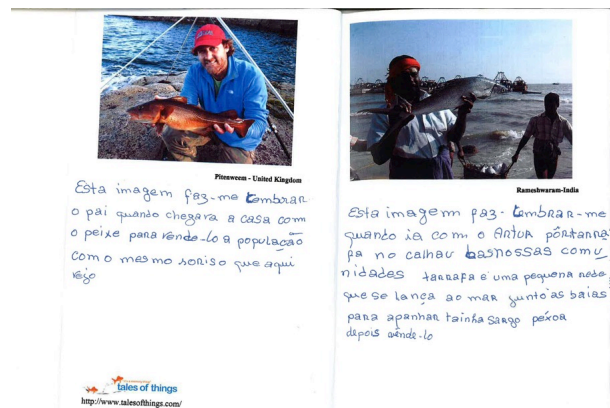


Figure 5. A story manual from a participant from Azores, Portugal.

1. Sound recorder

The kit contained 10 second sound recorder inspired by Gaver et al [8] dream recorder (see Figure 6). Unlike Gaver's dream recorder, the author provided an opportunity for the participants to both edit and rerecord their stories. The sound recorder supplied participant responses, both giving the author information on the way they connected with their community and indicating their opinions as to how they would prefer to utilise technology to further connect themselves with it.



Figure 6. Sound recorder secured using cardboard with questions and instructions printed on the side of the package.

2. Disposable camera

This research views visual studies as an important method for understanding the norms of each community. The author chose to employ disposable analogue cameras for the research because they are portable, affordable and can easily be used by participants of all ages. The author selected analogue cameras over digital cameras because of privacy and ethical issues (See figure 7). Digital photographs lack security since they are copied and shared easily. Digital photographs lack security since they are copied and shared easily. The participants returned the disposable cameras to the author and the photographs were manually developed and selected for analysis, thus protecting the privacy of the respective participants.



Figure 7. Disposable camera

3. Questionnaire

The aim of this was to adopt a more informal, friendly approach towards the participants and introduce simplicity to a method some participants could have construed as being rather complex in its operation. Using questionnaires in the story kit method had a further purpose. The author structured the questions so subsequent data arising from the participants' responses would give an indication of: i) their age and gender; ii) their perceptions of technology; iii) if they used technology and its type; and iv) their views on tradition, and cultural aspects within their communities.

4. Story Tag

Story tags were part of the story kit method and each one displayed an open-ended question, such as: How do you connect to people? Participants also received a QR code printed on the back of the tag as shown in Figure 8. This gave them an opportunity to scan and narrate the story.



Figure 8. Story tag with QR codes on one side and open ended question on the other side of the tag.

5. Instruction manual

The instruction manual provided a detailed explanation of the purpose of the story kit (see Figure 9). It elaborated on all the methods used within the kit and listed the sequence of procedures. Moreover, it provided clear guidelines on how to utilise all the technology included within the story kits. The instruction manual gave detailed information for each item in the kit and was provided in the relevant language.

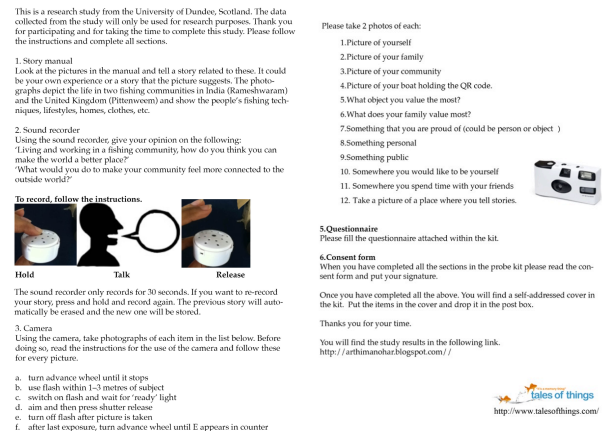


Figure 9. Instruction manual

Although the participants of story kit was explained to the mediator the author identified the instruction manual as being necessary to assist the participants in the later stages of the study; some of the participants took two and a half months to complete and return the story kits and during this time it was necessary for them to have an instruction manual at hand if and/or when they had issues with regard to the completion of the kit.

REFLECTION ON FIELD STUDIES

The field study phase involved taking photographs of the communities absorbed in their regular activities and followed by semi-structured interviews. From these photographs, the author selected photographs relevant to the context and presented them to the research participants via the story kit method in order to trigger personal stories. The following characteristics were observed during the field study:

i) India, Portugal and the UK: in all three countries participants from the chosen communities used technologies such as mobile phones, PCs and payphones as local communication tools. During the field study the author observed infrequent use of smartphones and restricted Internet access within each community. In all of the three communities there were both people who expressed a keen interest in adopting new technologies and those who showed no interest in them at all.

ii) India, Portugal and the UK: from the participants' responses, it was understood that in all three communities there was a growing socioeconomic problem because the participants considered fishing as an occupation to be in decline.

iii) India, Portugal and the UK: The author widely observed that the main activities occurred during the early morning (from 6 am to noon when the fishermen return from sea). Therefore, the research process was carried out during this specific time and in locations where the participants felt comfortable with being involved in the research activities.

REFLECTION ON THE DIGITAL STORYTELLING WORKSHOPS

Beyond ubiquitous barcode auto ID, the participants were not aware of emerging trends in auto ID; in particular, they were not aware of QR and RFID. In general, most of the participants were not aware of such technology, although a small number were familiar with QR codes. Those who were aware of auto ID, primarily the participants in the UK, were not aware of the attendant process or how it worked.

When conducting workshops with the chosen participants, adopting role playing kept the participants engaged throughout the session. By adopting roles such as director, camera person or actor, the participants knew their responsibility from the outset until the conclusion of each session. This concept proved effective in stimulating discussion and engaging participants in a lively manner throughout each session.

Building on the findings of Barthel et al. [2] the author employed mobile devices in the workshops for sharing experiences. During the sessions, it was observed that in all three communities it was easier to use mobile devices for digital storytelling both in terms of size and familiarity with the type of displays. However, it was also noted participants were restrained in their use of this augmented reality tool.

In these workshops, participants discussed their stories and experiences and converted them to digital stories with the help of auto ID technology and social media. By using the auto ID technology as social media, the author identified that the communication participants engaged in as shared and collective, thus providing a platform for the working groups to share their stories.

All three communities were not well equipped to support auto ID technology through broadband and smartphones. The unfamiliar technology was seen by the participants as problematic and cumbersome. However, it did prompt a certain type of 'social behaviour' in the workshops. For example, the UK workshops had participants of different age groups. The younger participants had a quick grasp of the technology compared to the older participants. Even though participants did not know each other, the younger participants helped the older ones by explaining the technology and helping them capture their stories. This triggered an interesting conversation among participants.

In line with Granqvist [11], technologies represent a 'cultural invention', as they help to develop new cultural norms. However, these new technologies should be culturally and socially sensitive and not entirely based on technological advance.

REFLECTION ON STORY KIT METHOD

Regardless of the advantages and disadvantages of the cultural probes themselves, story kits offer an opportunity to highlight the epistemological commitments of HCI design methods. Based on Gaver et al. [8] original probe method, the author modified the story kit in this research to be open-ended in nature and to encourage narratives from participants in three culturally different chosen communities. An important issue in this research method was the role of mediators in the chosen communities. During all three research stages, the mediators played a significant role in building trust between the participants and the researcher. The author considers the mediators' role in introducing the story kit method as crucial because the method was deployed without the presence of the researcher in the field.

In the past, researchers such as Gaver et al. [8] and Crabtree and Rodden [7] have used probes for empathetic engagement with participants for capturing data to provide inspiration for designers. However, in this research, the authors intention in utilising the story kit method alongside other participatory research methods was to understand the implications of auto ID technology and also for it to act as a

catalyst to generate personal stories through empathetic engagement.

Unlike other research methods, such as field studies and workshops, story kits gave the participants the opportunity to respond to as many or as few questions as they desired. However, during the field study and digital storytelling workshops phases the participants were placed in a confined environment and they might have felt obliged to answer the questions asked.

The rationale behind using story kits centred on observing social activity in the field studies phase. In this research, the story kit method enabled to open up practice and engage indirectly with the materials. It gave the participants the opportunity to share experiences as personal biographies that presented themselves as personal.

STORY CULTURE FRAMEWORK

The intersection between design research, participatory research and storytelling gave the author opportunity to build Story Culture framework. The framework acts as a technique for exploring cross-cultural communities using stories as its principal focus. The framework consists of three facets: i) field study involving story interviews; ii) digital storytelling workshops; and iii) the story kit method (see Figure 10).

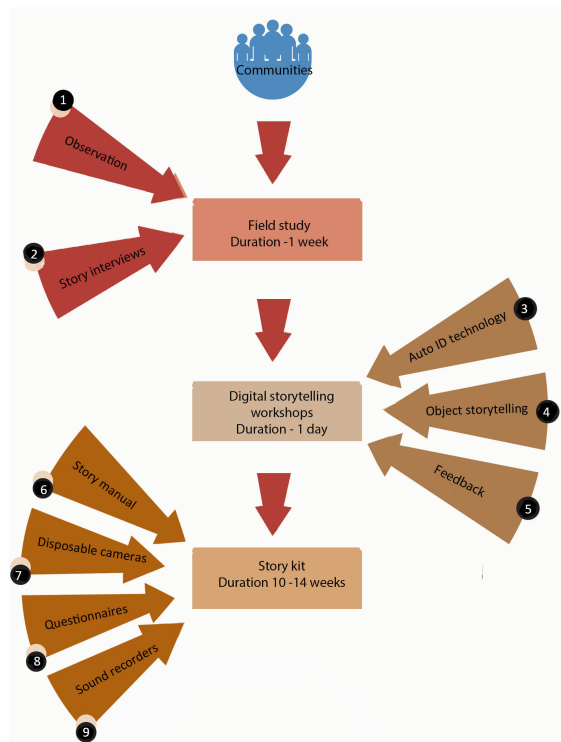


Figure 10. The story culture framework.

The author used storytelling as a medium to challenge the conventional approach to testing a particular technology in communities with different cultural contexts. This story culture framework will help researchers of the future face the practical challenges posed by cross-cultural studies. It

can be considered as a design methodology that will: help designers/practitioners understand socio economic challenges and user needs; build a sense of trust between participant and researcher; and act as a platform for demonstrating auto ID technology. It will also provide a significant resource for emerging communities and help to weave new interrelationships between people within the existing communities. The framework encouraged participants to reflect to different degrees on the possible usefulness of technology within their respective communities.

CHALLENGES

There were significant challenges in engaging with communities which were from remote geographical locations. To bridge this gap, the author adopted a distance research method, using the photographs taken during the story interviews and photographs taken by the participants as part of the overall participatory research methods. Furthermore, due to the geographical distance, the author encountered difficulties in observing changes within the community and in acquiring in-depth information after conducting the digital storytelling workshops and the story kit studies. The three research methods were executed within the span of three years. . Because of the time gap between research phases involving the overseas communities, some participants became less involved.

Ethical Challenges

This research study raised several issues with regard to ethics. For example, during the interviews the author observed that some participants expressed concerns about privacy. These issues were culturally different between India, Portugal and the UK. For example, the participants in India were reluctant to converse in front of others, especially when talking about personal objects and artefacts. Participants in Portugal were more engaging when surrounded by their family members and friends than when interviewed individually, as their input helped to build conversations and story narratives. In the interviews conducted in the UK, the participants had no such inhibitions; they were comfortable with the interview sessions, indicating the process was not new to them. Some participants in the UK had been part of similar research activities in the past, and were familiar with the interview format. A lot of their familiarity with research activity was due to the close proximity of the communities to the universities around them.

Technological Challenges

Concerns about auto ID technology were quite specific. The participants were primarily apprehensive regarding privacy. Some of them preferred not to share their video or audio recordings in a public forum. Technological challenges could be linked to issues concerning participants' lack of ease in using technology – difficulty in keeping track of the uploaded recordings or remembering their usernames and passwords. During the digital storytelling workshops I noted auto ID technology in particular was not welcomed

by every participant, particularly those from India and Portugal. These participants seemed especially preoccupied with the complex nature of the auto ID technology and were uneasy about using it. During the workshop auto ID technology in particular was not welcomed by every participant, particularly those from India and Portugal. These participants seemed especially preoccupied with the complex nature of the technology and were uneasy about using it. The participants also expressed cost concerns. Not all of them could afford smart devices or a computer to use the auto ID technology in their everyday lives. The research methods had played a role in helping participants reflect on whether or not such technology is useful in their everyday lives.

Limitations

The author acknowledges limitations in the study by a number of factors. First, research biases and subjective interpretation are difficult to avoid. Second, there were limitations by using QR code as a technology, findings would be different if different technology was used in the same study. Third, the testing throughout the research was undertaken with relatively small sample groups. The author argues the limited size is acceptable due to time constraint to engage with participants in three different locations was difficult. Finally, since this study was conducted among fishing communities, the results could be affected by factors unique to it alone. Thus, future research should investigate the influence of other factors, such as the organisational culture, or occupational groups, on knowledge-sharing strategies.

CONTRIBUTION AND DISCUSSION

The study brings original contribution to the HCI community through its challenges and findings. One of the significant contributions of the research was realising the importance of the role of mediators in the study.

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The author would like her PhD supervisors, all of the many colleagues and participants who we engaged in this work. The author would specially like to thank moderators in India and Portugal, without whom this work would not have been possible. The research was funded by EPSRC grant ToTEM: Tales of Things and Electronic Memories as part of the EPSRC Digital Economy theme.

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Findings show using storytelling as a tool showed a significant increase in community participation. However, it has also become evident such an approach does not work as a fast and easy solution for community problems. The findings have demonstrated that working with communities requires sensitive and culturally appropriate intervention.

The successes, challenges and failures in this research aim to inspire design students and HCI researchers when making the leap from education to professional practice and academic research. The author presents a personal account of participatory research exploration and communicates the hurdles faced when executing the methods to gather data and engaging with the participants in a cross-cultural context. The study highlights the significance of incorporating stories as a method to collect valuable user narratives and at the same time the approach will help the researchers involved to develop design inspiration from the users.

The research demonstrated that the framework developed through this practice-led approach helped to identify the need and potential for design research, including looking at the interface with emerging technologies to understand user groups from different cultures. The framework could be adapted and re-framed by a wider research community to benefit larger design projects which use emerging technologies to gain a deeper understanding of user groups. Additionally, through the use of participatory method and digital technology, this research study contributes to the repositioning and reframing of storytelling as a tool to investigate value and impact. Consequently, this study demonstrates a framework to conduct and evaluate future research on how people can harness alternative tools to benefit communities globally in emerging directions of interest.

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